

MASTER IN BUSINESS ADMINISTRATION

MANAGEMENT CENTER

INTERNATIONAL ISLAND UNIVERSITY

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FOREIGN EXCHANGE RATE FLUCTUATION:
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The undersigned certifies that the above candidate has fulfilled the conditions of the project paper prepared in partial fulfillment of the requirement for the Masters of Business Administration (MBA).

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FOREIGN EXCHANGE RATE FLUCTUATION : DOES USING THE 3-MONTH FORWARD INTERBANK RATES HELP TO REDUCE RISK

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Brief Synopsis

It was observed that there exists significantly higher risk when one entered spot exchange rates to manage MYR vs. USD and MYR vs. DM currency risks exposure when compared to hedging (basis trading). However the same cannot be deduced for MYR vs. JPY. This may be attributed to the use of derived cross-rate as there was inavailability of interbank datas for the period under study.

In addition, it was found that interest rate differential has significant impact on basis movement for MYR vs. USD and MYR vs. DM explaining 57% and 40% of the total variation in basis movements. It was found that using interest rate differential as an independent variable or predictor for basis and forward exchange rates, there was a higher level of accuracy in predicting basis vis-a-vis forward exchange rates. Hence, one can improve their currency risk management for MYR vs. USD and MYR vs. DM via selective hedging using interest rate differential as a determinant.

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1.0 OBJECTIVE AND MOTIVATION FOR STUDY

1.1 Introduction

An efficient foreign exchange market is one in which all opportunities for arbitrage profit are eliminated. This implies that in the absence of transaction costs, the law of one price will hold and the market expectations will be unbiased predictors of actual future or forward price(s). The above principle is embodied in five important parity conditions pertaining to foreign exchange, that is,

- a) Purchasing power parity (PPP), whereby the price(s) of goods will always be the same when expressed in a common currency (with allowance for transport costs).
- b) Interest rate parity (IRP), in which the real rate of return on assets will be equal and independent of the currency denomination of the assets.
- c) Fisher effect (FE), whereby the nominal exchange rate will be equal to the real exchange rate plus the expected inflation rate.
- d) International Fisher effect (IFE), a combination of (a) and (c) says that currencies with low interest rates are expected to appreciate relative to currencies with high interest rates.
- e) Rational expectations hypothesis in which market price expectations will be equal to the actual predictions of the future spot rates underlying theoretical model.

However, with the exception of highly developed foreign exchange markets of major developed countries, the foreign exchange markets in most developing

countries are characterized by market imperfections, thin trading and misalignment. Thus, opportunities for making profits out of information asymmetries prevail.

1.2 Effects of Government Policies on Exchange Rates

Governments are bound to have a wide range of objectives which, amongst others, include increasing the growth rate of the economy, achieving full employment, maintaining monetary and price stability, improving terms of trade and balance of payments, curtailing inflation and increasing international competitiveness of domestic enterprises. However, one of the major problems facing governments is that policies designed to solve one problem may have adverse effects on other problems. There are three major policy tools available to the government to achieve their objectives, namely monetary policy, fiscal policy and direct intervention such as price controls and exchange rate interventions. It is noted that these policies would ultimately affect the balance of payments and thus the exchange rate.

If the government decides that its major problem is unemployment, then it would embark on an expansionary economic policy. Its effect is to raise prices, stimulate imports and place downward pressure on the exchange rate. However, if high inflation is the problem, then this can be counteracted by a contractionary economic policy which increases unemployment, reduces imports and place upward pressure on the exchange rate. A balance of payment deficits may be counteracted by a contractionary economic policy

whereby unemployment rises, rate of inflation falls and place upward pressure on exchange rate. The, situation of balance of payment surplus can be counteracted by an expansionary monetary and fiscal policy which raises employment, imports, inflation and places downward pressure on the exchange rate.

Table 1 summarises the effects of these macroeconomic objectives on the exchange rate movements.

Table 1 : Impact of Government Policies on Exchange Rate

Problem	Prescription to overcome problem	Impact on other economic objectives	Impact on exchange rate
High unemployment	Expansionary monetary and fiscal policy	Price Levels: inflationary trends External Balance: deteriorates, import increases, capital outflows	Downward pressure
High inflation	Contractionary monetary and fiscal policy	Employment: tendency to decrease as aggregate demand declines	Upward pressure
Balance of payments deficit	Contractionary monetary and fiscal policy	Employment: tendency to decrease as aggregate demand declines Inflation: tendency to decrease as aggregate demand declines	Upward pressure
Balance of payments surplus	Expansionary monetary and fiscal policy	Employment: tendency to increase as aggregate demand increases Inflation: tendency to increase as aggregate demand increases	Downward pressure

1.3 PROBLEM STATEMENT

Post-Bretton Woods era has given rise to an exchange rate regime that is characterised by widely fluctuating and volatile movements of exchange rates. This brings along with it numerous problems, both on the macroeconomic and microeconomic fronts, affecting the economy as a whole and economic agents at large.

1.3.1 Impact of Foreign Exchange Rate Fluctuations on The Economy

On the macroeconomic front, exchange rate volatility can give rise to dramatic economic consequences to the economy as a whole. Fluctuating exchange rates introduces exchange rate risks in investing and trading transactions which ultimately affect international trade and investment capital flows. Therefore, it would directly or indirectly affect a nation's terms of trade and international competitiveness on the world market place.

In addition, fluctuating exchange rates would bring along with it increased interest rate risks. This is because foreign lenders of capital would demand higher risk premium in lending to nations with declining term of trade to cover greater exchange rate risks. This would lead to rising interest rates on domestic financial markets which would indirectly increase the cost structure of local manufacturers. Consumers would face rising price levels or inflationary pressures associated with higher import costs and increased demand for domestic substitutes which have lagged supply constraints.

Inevitably, the central bankers' role of maintaining economic and monetary stability becomes extremely challenging in the light of increasing exchange rate volatility. The fluctuating exchange rates caused the value of international reserves maintained by central banks to change over time. As a result, there is an increasing need for them to diversify their international currency portfolio held as reserves to minimise their reserve risks. In addition, the central bankers have to appraise critically the issues of reserve management, selected pegging and balance of payment policies in order to maintain monetary stability. These issues are more critical to developing and less developed countries with low international reserves and have pegged their currencies to major international currencies and in turn float with other currencies.

In short, exchange rates have profound impact on a nation's policy formulation issue for debt financing and servicing, term of trade, balance of payment, and attracting direct foreign investment. A sustained depreciation or crawling peg would worsen a nation's debt servicing and principal repayment burden in the event of debt denominated in foreign currencies. It also discourages inflow of foreign direct investments due to declining returns and investment assets from their subsidiaries in their home currency. Further, price of capital goods that are critically required to spur economic growth would rise and dent the viability of the respective projects. On the other hand, sustained exchange rate appreciation (in real term) would also affect a nation's international competitive and term of trade. It could, in the long run, reduce exports and increase import of cheap foreign goods. This could in

turn give rise to unemployment problems arising from the inability of domestic firms to compete against cheap imports. As a whole, a dirty float regime does not bode well for a nation's economic growth. Hence, the monetary authorities should pursue monetary stability at all costs in the long run.

1.3.2 Microeconomic Impact of Exchange Rate Fluctuation on Firms

During the post-Bretton Woods era, it is well known that exchange rates fluctuate widely in comparison to the more regular and stable prices of manufactured goods or durables. The regime of floating international exchange rates in their various forms has led to daily exchange rate fluctuations resembling commodity prices or futures. This more often than not has dramatic microeconomic consequences on economic agents at large, i.e. consumers, firms and public enterprises or the government.

These agents are bound to suffer from export and import price uncertainties in domestic currency terms for their trading and investment transactions. In short interval where manufacturers cannot adjust final prices on their product lines, they would be forced to absorb the higher costs arising from exchange rate movements. In most cases, manufacturers would maintain profits by raising selling prices of their manufactures. Such a decision may result in their customers switching to a competitor's product. Consumers would be burdened with higher prices for imported durables leading to the cascading effects of imported inflation on the domestic front. The sudden surge in

demand for local substitutes could invariably lead to rising prices of domestic goods that have inelastic supply structure.

In addition, exchange rate risks undoubtedly would also give rise to numerous issues that would affect both multinational and local transnational entities. These arise from uncertainties in their operational cost structure, foreign denominated liabilities and assets. Amongst these issues are :-

- a) Globalisation, being an inevitable phenomenon, tends to enable both local and foreign transnational corporations to minimise their funding costs for investments and borrowings by tapping capital from international financial markets. Indirectly, this brings along with it exchange rate risks depending on the currency denomination of the financial package. Thus, fluctuation in exchange rate would result in fluctuating values of their long-term debts, debt servicing requirements, foreign direct investments and its associated opportunity costs.
- b) Assets, liabilities, sales turnover, and income or dividend remittances to their holding company and shareholders are subject to uncertainties arising from exchange rate risk. These would complicate the determination of company's rate of return requirements, opportunity costs of capital and forecasted sales turnover requirements in foreign currency terms for multinationals and domestic currency for local transnational. Invariably, all these could affect the evaluation of the holding company stock prices traded on the stock exchange.

- c) Raw and intermediate inputs that are exported or imported by both local and foreign transnational entities are subjected to the vagaries of exchange rate fluctuations. Consequently, it would affect the invoicing policies and its associated payment terms for these goods. Ultimately, these costs would directly affect their bottomline or profitability of their subsidiaries and indirectly affect their holding company's performance.
- d) Multinational intracompany transactions for imports or exports are bound to be denominated in foreign currencies. The fluctuating exchange rate would thus affect the transfer pricing policies for these transactions.
- e) Transnational corporations are bound to maintain a certain amount of trade credit and inter-company loans to its subsidiaries abroad to meet their working capital requirements. As a result of fluctuating exchange rates, the holding company's asset exposure and operational costs are bound to be fluctuated in value in their parent company's home currency terms.

1.4 Objective of this Study

Historically, the Malaysian Ringgit is known to fluctuate within a wide band vis-à-vis major foreign currencies via pegging against a basket of foreign

currencies of her major trading partners under a managed floating mechanism. The objective of this study is two-fold, namely,

- a) to determine the extent of exchange rate fluctuations of the Malaysian Ringgit vis-a-vis US Dollar, Japanese Yen and Deutsche Mark over the past six years (1991-1996)
- b) to determine if 3-month forward rates could be used to effectively managed these risks.

2.0 LITERATURE REVIEW

2.1 Definition of Hedging

Hedging may be defined as arranging two different or opposite trading positions such that the potential loss from one position tend to be, more or less, offset by the profits from the opposite position. Alternatively, the act of hedging involves the establishment of offsetting long and short positions in order to diminish the portfolio's risk that could result from adverse price movements. Some hedges are undertaken to reduce potential losses whilst others are set-up with expectations of reaping a profit.¹

With the evolution of the financial derivative markets during the post-Bretton Woods periods, there have been a general lowering of cost and increasing precision with which the market is able to unbundle and distribute risks among risk bearers, namely hedgers, speculators, market makers and brokers through the derivative markets. However, there exist numerous diverging views about the benefits of hedging.

The common perception is that hedging is good since it reduces the volatility of a firm's earnings. By doing so, it makes the cashflow stream of the company less volatile. In turn, this reduces the risk premium investors demand to hold its stocks and bonds. Ultimately, this would raise the present values of cashflows since they would be discounted at a lower rate, thus increasing shareholders wealth.

¹¹ Francis, J.C., "Investments : Analysis and Management, Fourth Edition, McGraw Hill Book Co.,1986 : pp 596-598.

The alternative view is that hedging is bad since it reduces risks based on the argument that value is generally associated with risk-taking and not by avoiding it, that is, the higher the risk, the higher the rate of returns. Thus, firms must take on reasonable risks to create value; and if it avoids risks, it gives up this value.

Hedging is also considered irrelevant, based on the opinion that many sources of volatility within a firm's environment are systematic risks that affect almost all firms within the industry. Therefore, if the firm reduces its share of risks by hedging, then it would pass these risk on to some counterpart who would demand compensation for bearing this risk. That compensation is precisely equal to the increase in the value of the firm's cashflow arising from lower discounting rates. Thus, shareholders will be neither better nor worse off. Therefore, hedging is irrelevant to what the firm does to manage this risk.²

Two conditions must be met for a hedging strategy to be worthwhile, namely,

- a) It must change the firm's cashflows in a way that shareholders' wealth is greater than the cost of hedging, and

² Pflleiderer, P. and Fite, D., Should Firms Use Derivatives to Manage Risks? in Risk Management : Problems & Solutions : pp 141-144.

- b) It must be the least expensive way to bring about the beneficial change in cashflows and be efficient in adjusting the risk exposures whilst creating wealth.

2.2 Concepts of Hedging

The hedging theory has changed considerably over time. Three relatively distinct strains of the theory have marked its evolution. The three theories are :

- 1) Traditional Theory
- 2) Working's Arbitrage Theory and
- 3) Portfolio Theory

Traditional Theory - Traditional theory emphasizes the risk avoidance potential of futures market. Hedgers are envisioned as taking futures positions equal and opposite to positions they have (or intend to have) in the cash market. The emphasis is on risk avoidance. In terms of the basis, defined as the difference between the cash price and the future price, a stable basis is critical to have a realization of a perfect hedge. A hedge is deemed as perfect, or completely effective, if there is no change in the basis over the life of the hedge.

*Working's Arbitrage Theory*³ - In direct contrast to traditional theory, Working argues that rather than being risk avoiders, most hedgers are, in fact, arbitrageurs who hedge on the expectation of making a profit. Instead of expecting cash and futures prices to move together (a stable basis), Working

³ Powers, M.J. and Castelino, M.G., Inside the Financial Futures Markets Third Edition : pp 260 - 261.

stated that most hedging is done on the expectation of a favourable change in the basis. Hedgers act much like speculators. Instead of speculating on changes in cash prices, they speculate on changes in the cash - futures relationship - the basis. Working's arbitrage approach to hedging has often been interpreted as an "expected profit maximization approach", particularly by the proponents of yet a third theory - portfolio theory.

Portfolio Theory - Portfolio theorists argue that if traditional theory emphasizes risk avoidance and Working emphasizes profit maximization, a middle approach that trades off profit against risk must exist. The fraction of stock hedged depends on the degree of risk aversion of the hedger. In portfolio theory, cash and futures are not viewed as substitutes where Working views a future transaction as a temporary substitute for a cash transaction. Consequently, the basis between cash and futures prices plays no explicit role in the hedging decision.

Hedging should be looked upon as a process of risk management that involves decisions as to whether, when, and how to utilize the futures market. The following questions will aid one in making the hedging decisions:

- 1) *What is the risk exposure ?*
- 2) *Is the risk affordable ?*
- 3) *Is the risk hedgeable in futures market ?*
- 4) *What is the basis relationship ?*
- 5) *What are the costs of hedging ?*

6) *What are the tax implications of the hedge ?*

Basis Risk - Basis risk may be strictly defined as the deviation of the contract value from its predicted value. A hedge is considered riskless if the actual basis equals the expected basis. Otherwise the hedge is risky. Excellent tracking of cash and future prices on basis stability is seen as a requirement for effective hedging. The basis cannot be stable because cash and future prices must converge to each other over time necessitating a gradual shrinkage in the basis.

Cross-Hedges - If every financial instrument in the cash market had a futures contract that exactly mirrored its characteristics, futures market would provide the opportunity to yield very good hedges. In the real world hedging must often be accomplished by using futures contracts on different deliverable instruments. Such hedges are called cross-hedges.

An example of a cross-hedge is the use of the T-bill or the Eurodollar contract to hedge another money market instrument - CDs, BAs, commercial paper, prime rate, and so on. Another example would be the use of the Treasury bond futures contracts to hedge a different long-term asset or liability, such as corporate bonds, permanent construction financing, or other long-term investments and loans.

Cross-hedges are generally considered riskier than hedging the instrument underlying the futures contract, because of the additional dimension to basis